

CLAIMS

1. Multi-step transmission in planetary construction, especially an automatic transmission for a motor vehicle, including an input shaft (1) and an output shaft (2), which are arranged in a housing (G), three spider supported planetary gears (P1, P2, P3), at least seven rotational shafts (1, 2, 3, 4, 5, 6, 7), as well as at least six shifting elements (00, 03, 13, 36, 45, 47, 67), including brakes and clutches, whose selective engagement brings about different reduction ratios between the input shaft (1) and the output shaft (2), so that seven forward gears and one reverse gear can be realized, w h e r e i n the input takes place through a shaft (1), which is continuously connected with an element of the first planetary gear set (P1), wherein a further element of the first planetary gear set (P1) is torsion-resistantly connected with the housing (G) through a shaft (0), wherein the output takes place through a shaft (2), which is continuously in connection with the planet carrier of the second planetary gear set (P2) and the ring gear of the third planetary gear set (P3), wherein a shaft (3) is continuously connected with the planet carrier of the third planetary gear set (P3), wherein a shaft (4) is continuously connected with the ring gear of the second planetary gear set (P2), wherein a shaft (5) is continuously connected with the ring gear of the first planetary gear set (P1), wherein a shaft (6) is continuously connected with the sun wheel of the second planetary gear set (P2), wherein a shaft (7) is continuously connected with the sun wheel of the third planetary gear set (P3), whereby the shaft (3) can be coupled to the housing (G) through a brake (03), a clutch (13) detachably connects shaft (1) and shaft (3) with each other, a clutch (36) detachably connects shaft (3) and shaft (6) with each other, a clutch (45) detachably connects shaft (4) and shaft (5) with each other, and whereby a clutch (46) detachably connects shaft (4) and shaft (6) with each other, a clutch (47) detachably connects shaft (4) and shaft (7) with each other, and whereby a clutch (67) detachably connects shaft (6) and shaft (7) with each other.

2. Multi-step transmission according to claim 1, wherein the shaft (1) is continuously connected with the sun wheel of the first planetary gear set (P1), and

wherein the planet carrier of the first planetary gear set (P1) is connected with the housing (G).

3. Multi-step transmission according to claim 1, wherein the shaft (1) is continuously connected with the planet carrier of the first planetary gear set (P1), and wherein the sun wheel of the first planetary gears is connected with the housing (G).

4. Multi-step transmission according to one of the claims 1 to 3, wherein the second planetary gear set (P2), and the third planetary gear set (P3) are constructed as minus planetary gear sets, and the first planetary gear set (P1) is constructed as a plus planetary gear set.

5. Multi-step transmission according to one of the preceding claims, wherein the fixed connection of the first planetary gear set (P1) with the housing (G) can be replaced with a detachable connection by means of a brake (00).

6. Multi-step transmission according to claim 5, wherein an electric machine or a further input shaft may be arranged on the shaft (0) detached from the housing (G).

7. Multi-step transmission according to one of the preceding claims, wherein additional free wheels can be used on any suitable position.

8. Multi-step transmission according to claim 7, wherein the free wheels are provided between the shafts (1, 2, 3, 4, 5, 6, 7), and the housing (G).

9. Multi-step transmission according to one of the preceding claims, wherein the input and output are provided on the same side of the housing.

10. Multi-step transmission according to one of the preceding claims, wherein an axle and/or an interaxle differential is arranged on the input side or the output side.

11. Multi-step transmission according to one of the preceding claims, wherein the drive shaft (1) can be separated from a drive motor through a clutch element.

12. Multi-step transmission according to claim 11, wherein a hydrodynamic converter, a hydraulic clutch, a dry starting clutch, a wet starting clutch, a magnetic powder clutch, or a centrifugal clutch is provided as clutch element.

13. Multi-step transmission according to one of the preceding claims, wherein an external starting element, especially according to claim 12, can be arranged behind the transmission in the direction of the power flow, whereby the input shaft (1) has a fixed connection with the crankshaft of the motor.

14. Multi-step transmission according to one of the preceding claims, wherein starting takes place using a shifting element of the transmission, whereby the input shaft (1) is continuously connected with the crankshaft of the motor.

15. Multi-step transmission according to claim 14, wherein the clutch (45) or the brake (03) can be used as a shifting element.

16. Multi-step transmission according to one of the preceding claims, wherein a torsion vibration damper can be arranged between motor and transmission.

17. Multi-step transmission according to one of the preceding claims, wherein a wear-free brake can be arranged on each shaft.

18. Multi-step transmission according to one of the preceding claims, wherein an auxiliary output can be arranged on each shaft for driving additional units.

19. Multi-step transmission according to claim 18, wherein the auxiliary output can be arranged on the input shaft (1) or the output shaft (2).

20. Multi-step transmission according to one of the preceding claims, wherein the shifting elements are constructed as power-shifting clutches or brakes.

21. Multi-step transmission according to claim 20, wherein multi-plate clutches, band brakes, and/or cone couplings can be used.

22. Multi-step transmission according to one of claims 1 to 19, wherein positive-locking brakes and/or clutches are provided as shifting elements.

23. Multi-step transmission according to one of the preceding claims, wherein an electrical machine can be attached on each shaft as a generator, and/or as an additional drive machine.